

GLAUCOCYSTIS RENIFORMIS SP. NOV. FROM ANDAMAN ISLANDS

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ABSTRACT. — A new species of *Glaucocystis* Itzigs., *G. reniformis* sp. nov. has been described from Andaman Islands. The freshwater alga grows attached and has kidney-shaped cells with scattered parietal cyanelles.

KEY WORDS : New species, Chlorophyceae, Chlorococcales, *Glaucocystis*.

INTRODUCTION

Glaucocystis Itzigs. is an interesting rare genus wherein, endophytic blue-green cyanelles appear like chromatophores within a colourless chlorococcalean alga. Records of this alga from India are rare (PHILIPOSE, 1967) and out of a total of four species (PRESCOTT, 1962; PHILIPOSE, 1967), only one species, *G. nostochinearum* (Itzigs.) Rabenhorst has been reported by PRASAD (1961) from South India. Another species, *G. cingulata* Boh. has been recorded from Burma (SKUJA, 1949).

In the course of investigations on the algal flora of Andaman Islands (Bay of Bengal), the authors came across a new species of genus *Glaucocystis* Itzigs. It is proposed to describe the new alga here.

GLAUCOCYSTIS RENIFORMIS SP. NOV. (Figs. 1-8)

Coloniae 2-4- (plerumque 2-) *cellulatae*, in *mucilagine inclusae*, in *massa vulgo flabelliformes*, 47-58.5 μm *longae*, 38-39.5 μm *latae*; *cellulae reniformes pallide glaucae*, 24.5-29 μm *longae*, 15-18 μm *latae*, *membrana* 1.5-2 μm *crassa circumdatae*; *cellula quaque ad centrum cyanellis parietalibus dispersis chromatophoroideis et nucleo magno conspicuo praedita*.

Hab. . *inter algas alias in lacunis dulcibus intermixta*, Rangat et Port Blair 10/11/78 et 19/11/78. *Typus in collectionibus algaceis Univ. Lucknow*, sub numero 360F.

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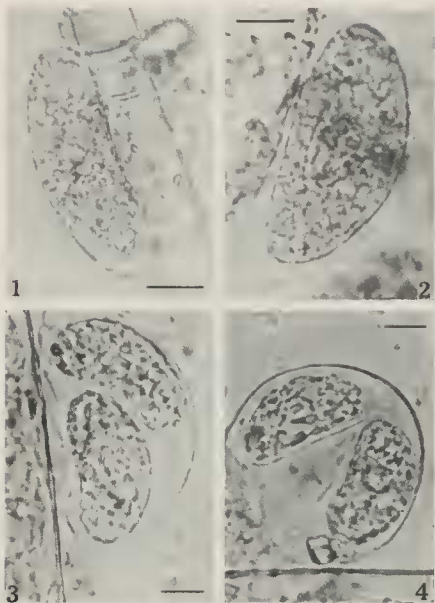


Fig. 1-4 : *Glaucozystis rentformis* sp. nov. — 1 : A single cell attached to an alga. 2 : A single cell in a hump like envelope. 3 : A two-celled stage enclosed in mother envelop. 4 : Two cells in a colony that is getting enlarged and bulbous. All scales : 10 μ m.

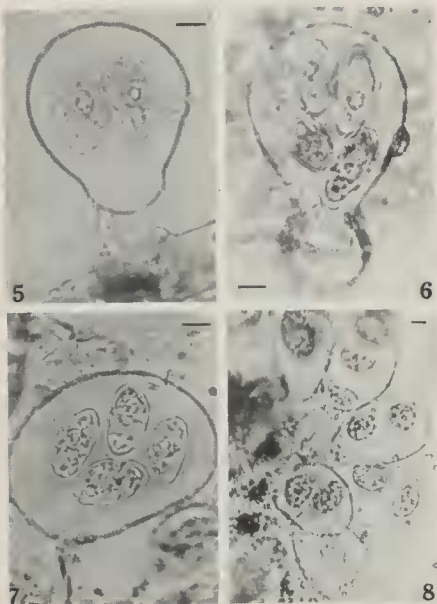


Fig. 5-8 : *Glaucocystis reniformis* sp. nov. — 5 : Bulb-shaped colony containing two cells. 6 : Bulb-shaped mucilaginous envelope containing four cells. 7 : A free-floating colony with four cells. 8 : Fan-shaped cluster of colonies. All scales : 10 μ m.

TABLE I

Characters	<i>G. nostochinearum</i> (Itzig.) Rabenh. (cf. Philipose 1967 & Prasad, 1961)	<i>G. cingulata</i> Bohlin (cf. Philipose, 1967)	<i>G. duplex</i> Prescott (cf. Prescott, 1962)	<i>G. oocystiformis</i> Prescott (cf. Prescott, 1962)	<i>G. reniformis</i> sp. nov.
I. Habitat and Morphology of colonies	Planktonic, free floating Colonies of 2-8 (usually 4) cells, enclosed within old mother cell wall; Colonies 26-51 μm broad and 39-63 μm long.	Planktonic (?) Cells solitary or in colonies of 2-4 cells; Colonies 30-160 μm in diameter	Intermingled with other algae. Colony composed of 8-16 cells enclosed by a much enlarged spherical mother cell-wall. Colonies 150-170 μm in diameter	Planktonic (?) Cells solitary (or in colonies?).	Attached to other algae or aquatic plants. Singly or in colonies of 2-4 (usually 2) cells assembled together in mucilage to form hump-shaped or bulb-shaped colonies, finally becoming fan-shaped aggregates. Colonies 38-39 μm broad, 47-58.5 μm long.
II. Shape and size of cells	Cells oblong-ellipsoid, 10-21.6 μm broad and 15-32 μm long.	Cells ovoid to nearly spherical (cell membrane upto 2 μm thick), slightly more thickened at the poles and with a small equatorial groove, which appears as a ridge on the inner side of the cell; Cells 12-20 μm broad and 18-68 μm long.	Cells spherical without a median annular thickening in the wall. 40-44 μm in diameter.	Cells broadly elliptic with nodular thickenings of the cell-wall at poles; 20-27.3 μm broad and 40-45 μm long.	Cells kidney-shaped, 15-18 μm broad and 24.5-29 μm long; Cell walls uniformly thick throughout, 1.5-2 μm thick.
III. Cyanelles	Less than 20 in number, axial and radiating in arrangement; vermiform, light-blue.	Cells with 20 or more axile, deep blue cyanelles, radiating from centre.	Cyanelles in the form of two stellate masses of long or short, blue-green vermiform cyanelles radiating from 2 separate points in each cell.	Cyanelles numerous, in the form of irregular pads near the periphery of the cell around a central, spherical colourless vacuole.	Each cell with 15-20 cyanelles which are parietal, vermiform and scattered in the cell.

GLAUCOCYSTIS RENIFORMIS SP. NOV. (Fig. 1-8)

Colonies of 2-4 cells (usually 2), embedded in mucilage, colonial mass usually attached, later becoming fan-shaped aggregates, arising from a common base, colonies 47-58.5 μm long and 38-39.5 μm broad; cells somewhat kidney-shaped, light blue-green, 24.5-29 μm long and 15-18 μm broad, cell-membrane 1.5-2 μm thick; each cell with 15-20 parietal, vermiform and scattered cyanelles and a large, conspicuous nucleus in the centre.

Habitat : Epiphytic or intermingled with other algae or aquatic angiosperms in two fresh-water ponds.

Loc. : Rangat (Middle Andamans) and Port Blair (South Andamans).

Coll. Nos : 277F and 360F.

Date : 10/11/78, 19/11/78.

The type material is deposited in the Algal Collections, Lucknow University under no. 360F.

The present alga belongs to genus *Glaucozystis* Itzigs. because of the presence of endophytic blue-green cyanelles and autospores (GETTLER, 1932; FRITSCH, 1932; PRASAD, 1961).

Table I summarises the characters of all the four species of *Glaucozystis* Itzigs. known so far and compares them with characters observed in the present alga.

DISCUSSION

A perusal of Table I indicates that the present alga differs from all other known species of the genus *Glaucozystis* Itzigs. in (a) being attached to aquatic plants and forming a hump-shaped envelope containing, at first a single cell when young (Fig. 1 & 2) which may divide becoming two-celled (Fig. 3 & 4) and subsequently attaining a bulb-shaped form with a definite attachment (Fig. 5 & 6), the final cluster of colonies being fan-shaped (Fig. 8), with an occasional colony becoming free-floating (Fig. 7), (b) reniform shape of cells and in the (c) vermiform morphology and scattered parietal, 15-20 cyanelles inside the cells.

The present species is comparable only to *G. oocystiformis* Prescott in possessing parietal chromatophore-like cyanelles but differs from it in the (a) presence of attached colonies (b) kidney-shaped cells in each colony (c) absence of polar nodules and in possessing (d) elongate vermiform cyanelles. It differs from all other known species of the genus strikingly in possessing parietal instead of axile cyanelles, the attached nature of the colonies and in the reniform shape of the cells.

It is, therefore, clearly a new species of the genus *Glaucozystis* to be named *Glaucozystis reniformis* sp. nov.

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